HVAC TECHNICIAN

A student who has completed Job Corps' Heating/Air Conditioning program is trained and ready to work in this field. To complete a trade, the student must learn the academic and vocational skills required for graduation. Job Corps students also learn good work and personal habits, preparing them for life after Job Corps. To complete the Heating/Air Conditioning program, a student must master skills in the following categories:

A/C SYSTEM DIAGNOSIS AND REPAIR

• Diagnose unusual operating noises in the A/C system; determine needed repairs.

Conduct a performance test of the A/C system, a leak test of the A/C system and determine needed repairs. Inspect the condition of discharged oil. Select oil type, measure and add oil to the A/C system as needed.

REFRIGERATION SYSTEM COMPONENT DIAGNOSIS AND REPAIR

• Diagnose and correct compressor and clutch problems.

Diagnose A/C system problems that cause the protection devices (pressure, thermal, and PCM) to interrupt system operation and determine needed repairs. Inspect A/C compressor drive belt and tensioner; replace and adjust as needed. Inspect, test and replace A/C compressor clutch components or assembly. Remove and replace A/C compressor and mountings. Inspect and replace A/C compressor shaft seal assembly.

• Diagnose and correct evaporator, receiver/drier, condenser problems.

Diagnose A/C system problems caused by too much moisture in the refrigerant and determine needed repairs. Install A/C system filter. Remove and inspect A/C system mufflers, hoses, lines, fittings, o-rings, seals and service valves; replace as needed. Inspect A/C condenser for air flow restrictions; service as required. Inspect receiver/drier or accumulator/drier; replace as needed. Inspect and test expansion valve or orifice (expansion) tube; replace as needed. Inspect evaporator housing water drain; repair as needed.

HEATING AND ENGINE COOLING SYSTEMS DIAGNOSIS AND REPAIR

• Diagnose temperature control problems in the heater/ventilation system.

Perform cooling system, cap and recovery system tests (pressure, combustion leakage, and temperature); determine needed repairs. Inspect engine cooling and heater system hoses and belts; replace as needed. Inspect, test and replace thermostat and housing. Determine coolant condition; drain and recover. Flush system and refill with recommended coolant; bleed system. Clean, inspect and test fan, fan clutch (electrical and mechanic), fan shroud and air dams; replace as needed. Inspect and test heater control valve(s); replace as needed.

OPERATING SYSTEMS AND RELATED CONTROLS DIAGNOSIS AND REPAIR

- **Inspect, diagnose and repair electrical components.**

Diagnose failures in the electrical controls of heating and A/C systems; determine needed repairs. Inspect and test A/C heater blower, motors, resistors, switches, relays, wiring and protection devices; repair or replace as needed. Test A/C compressor load cut-off systems; determine needed repairs.

- **Inspect, diagnose and repair vacuum/mechanical components.**

Diagnose failures in the vacuum/mechanical controls of the heating and A/C system; determine needed repairs. Inspect and test A/C heater control panel assembly; replace as needed. Inspect and test A/C-heater control cables and linkages; adjust or replace as needed. Inspect and test A/C-heater vacuum control switches, hoses, diaphragms (motors), vacuum reservoir, check valve, and restrictors; replace as needed. Inspect and test A/C-heater ducts, doors, hoses and outlets; replace as needed.

- **Inspect, diagnose and repair automatic and semi-automatic temperature controls.**

Check operation of automatic and semi-automatic heating, ventilation, and air-conditioning (HVAC) control systems; determine needed repairs.

REFRIGERANT RECOVERY, RECYCLING AND HANDLING

- **Safely recover and recycle refrigerant chemicals.**

Verify correct operation and maintenance of refrigerant handling equipment. Identify and recover A/C system refrigerant. Recycle refrigerant. Label and restore refrigerant. Test recycled refrigerant for non-condensable gases. Evacuate and charge A/C system.